LETTERS TO THE EDITOR.

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Earthquake in Guatemala.

THOUGH I have been a subscriber and devoted reader of NATURE for about twenty years, I have not hitherto troubled you with any communications. Now I think it will interest you to obtain some data about a very disastrous earthquake which recently shook nearly the whole of the republic of Guatemala and the neighbouring countries, destroying many towns and causing immense loss of property and of many lives.

At 8.25 p.m. of April 18 an earthquake of more than thirty seconds duration affected a large part of Guatemala, eastern Chiapas and western Salvador and Honduras. The intensity of the movement was greatest in western Guatemala, where the second and richest city of the country, Quezaltenango, was completely destroyed, with the loss of about 500 lives. Completely ruined also were Sololá, San Marcos and its sister town San Pedro Sacatepequez (more than 200 lives being lost), and the same happened to Retalhuleu and Mazatenango, important towns on the Pacific coast-plain, to the south of Quezaltenango. The places before mentioned are situated on the highlands, a little to the north of the great volcanoes.

Besides the cities named, nearly every town and hamlet in the Departamentos of San Marcos, Quezaltenango, Retalhuleu, Suchitepequez and several in Chimaltenango are ruined, and perhaps every one of the many important coffee- and sugar-plantations in the western coast-region has had its buildings, machinery and the aqueducts ruined. The total number of lives lost may be about 800 to 900.

At the port of Ocos, only three houses remained standing and the big landing-pier was broken near the land.

In the city of Guatemala most of the churches and some houses sustained slight damages; the same happened in Antigua (Guatemala). Escuintla and Amatitlan suffered considerably.

The railways between Retalhuleu and the port of Champerico, and the one between Ocos and Coatepec were interrupted by the falling of bridges and damage to the road. The railway between Guatemala and the port of San José remained unaffected and intact.

In the eastern portions of Guatemala the shock was only weak. I was at the time on my plantation "Germania," and did not feel anything at all.

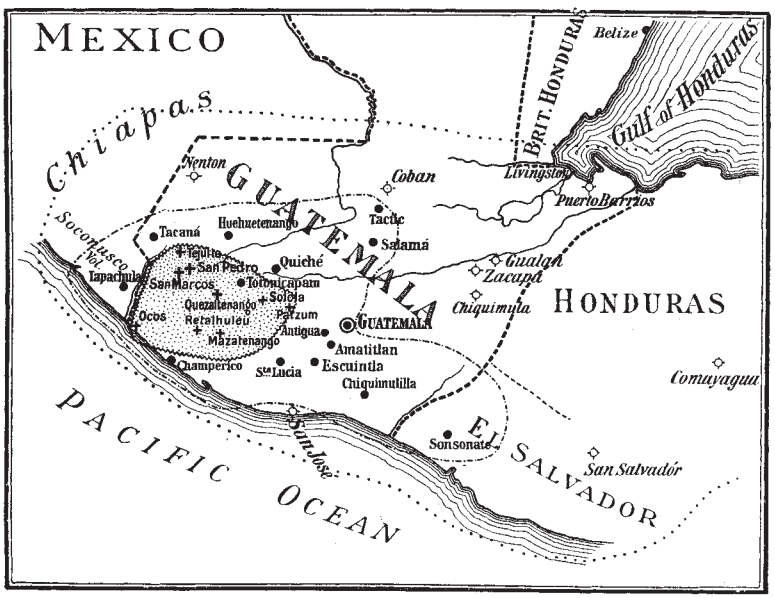
Until May 5 earthquakes of small intensity were still frequent from the city of Guatemala to the west.

A commission of engineers has been sent by the Government to Quezaltenango and San Marcos, to select new places for the rebuilding of these towns.

During the night of April 11–12 a severe thunderstorm did considerable damage to houses and other property at San Salvador, the capital of the republic of El Salvador, and at 7.25 p.m. on April 16 a powder explosion blew up the military barracks at Managua, the capital of Nicaragua, destroying a number of houses and killing many people. I mention this because later on these events might get mixed up with the earthquake.

EDWIN ROCKSTROH.

Gualan (Guatemala), May 7.



Earthquake, 8.25 p.m., April 18.

- - - - - Limits of Guatemala.

~~~~ Region of greatest intensity.

-·-·-·-·- Region where buildings were destroyed.

\+ Quezaltenango. Towns completely destroyed.

● Escuintla. Towns which suffered damage.

• • • • • • • • Region from which notices about the earthquake have reached me.

⊹ Nenton. Places where the shock was felt distinctly.

From Chiapas there is only one report about Tapachula, and from Honduras about Comayagua. It is not possible to say how far to the east and to the west the movement was felt.

The Vibration of the Violin.

I HAVE been taken to task for saying, in my little book on the violin, that the vibrations of the wood of the instrument "reinforce the tones of the string." Perhaps some readers of NATURE may be able to point out whether I am guilty of an incorrect or merely unconventional statement.

Briefly, I use the word "reinforce" in the fullest sense, or rather senses, of the term. There is, I take it, (1) a reinforcement of the tones of the string itself by *resonance*; and (2) a reinforcement (in the sense in which an army is reinforced by a regiment or battalion) consisting of the tones contributed by the vibrations of the pine and sycamore.

The reinforcement of the sound of a brass band by cymbals would seem to supply another and more direct analogy.

The tones of the string are no doubt by themselves very feeble, but not unimportant when reinforced by resonance. If in the case of the violin we substitute for the ordinary gut string a string of, say, silk, we distinguish a slight, but quite perceptible, difference in the *timbre* of the instrument; but this difference is not a measure of the intensities of the particular tones to which the difference is due.

If I is the intensity of the fundamental tones of the two strings, Σi the sum of the intensities of the overtones of the gut string, and $\Sigma i'$ the sum of the intensities of the overtones of the silk string, then what we distinguish in the consonant note of the instrument is

$$(I + \Sigma i) - (I + \Sigma i') = \Sigma i - \Sigma i';$$

but we form no idea as to the absolute values of I, Σi and $\Sigma i'$. We cannot, in fact, say in what proportion they contribute to the intensity of the consonant note of the instrument.

(The difference observed in the *timbre* of the gut and silk strings is not, of course, necessarily due only to a difference of
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intensity in their overtones. There may be a difference in number, but this does not appear to affect the question of whether the tones of the string form an appreciable part of the consonant note of the violin.)

If a vibrating tuning-fork is placed in contact with the wood of a violin, the instrument reinforces the tone of the fork; but the vibrations of the wood are here much less powerful than in the case of the string, and consequently the instrument only feebly asserts its own *timbre*. A very ordinary violin will reinforce the tone of a fork almost as perfectly as a masterpiece of Cremona.

I therefore take it that the reinforcement of the tone of the fork is chiefly the result of resonance, and that the intensity of the tone of the violin is due to the reinforcement of the tones of the string itself by resonance, *plus* the reinforcement contributed by the tones of the pine and sycamore, and that the latter determine the *timbre* of the instrument.

The tones of the pine and sycamore are also reinforced by resonance, in the same way as those of the string.

June 2. W. B. COVENTRY.

The "Armorl" Electro-Capillary Relay.

ON p. 129 of vol. lxv. of NATURE, a description is given of an electro-capillary relay. The writer states that the actual apparatus was not seen by him, "but only a working model." It would be highly interesting to know the exact meaning of this expression. Does it mean a model which *will work*, or only a model in which the different parts of the apparatus are shown, say, in wood or cork or any other substance. In the illustration, the mercury when acted on electrically is shown as moving the lever of a relay. A well-made capillary electrometer is highly sensitive to a small change of potential, but the movement of the mercury column is so minute that it is very difficult to see how any lever of a relay could possibly be worked by means of its movement. Some further information about the "Armorl" relay would, I feel sure, be acceptable to many, showing the potential difference required to cause the mercury to work the lever *k*, and also the approximate E.M.F. set up at, say, ten miles from the sending station of a wireless telegraphic system. J.-S.

Prehistoric Pygmies in Silesia.

UNDER the above heading, Prof. G. Thilenius, of the University of Breslau, has recently (*Globus*, Bd. lxxxi. No. 17) made an important contribution to European ethnology. His deductions result from an examination of a quantity of osseous remains preserved in the Museum of Silesian Antiquities at Breslau, consisting of four groups obtained at different sites in the region between Breslau and the Zobten. They are, unfortunately, very fragmentary; but it has been ascertained that they are the remains of a number of persons of both sexes, all adult and all of very short stature. The mean height of one group is about 4 feet 8 inches (1·429 m.), of two others about 4 feet 11 inches (1·496 m.; 1·506 m.), and of the fourth about 5 feet (1·523 m.). With these Prof. Thilenius compares the remains of the Swiss pygmies described by Prof. Kollmann, of Basel, who estimates their height as ranging between 4 feet 5⅓ inches (1·355 m.) and 4 feet 11 inches (1·499 m.), and comparison is also made with the similar remains found at Egisheim (in Lower Alsace, near Colmar), which belonged, according to Herr Gutmann, to people whose stature ranged from about 3 feet 11 inches (1·200 m.) to something under 5 feet (1·520 m.). Further, the museum at Worms furnishes the remains of an individual of the estimated height of 4 feet 9 inches (1·445 m.). In all these cases, the bones show no trace of any pathological degeneration, and the consequent inference is that they represent a special race of low-statured men, or dwarfs. Profs. Kollmann and Thilenius seem to prefer the term "pygmy" as most appropriate in denoting a special *race*, "dwarf" (*Zwerg*) being regarded as applicable to abnormal specimens of a race of ordinary size. Most writers, however, make no such distinction; and, indeed, "pygmy" is far from being strictly accurate when applied to people of 4 or 5 feet in height. Prof. Windle states that a people may be described as "pygmy" in which the average male stature does not exceed 1·450 m. (4 feet 9 inches).

Prof. Thilenius gives a wide range for the period in which those little people lived. While those of the Rhine valley are placed far back in time, some of the Silesian dwarfs are assumed to have been contemporaneous with the Romans and the Slavs, the most recent being placed at about a thousand years ago. But, before arriving at anything like a final conclusion on any of the questions relating to the mid-European pygmies, Prof. Thilenius desires a much greater acccumulation of evidence in the shape of skeletal remains, and there is good reason to hope that this will be forthcoming in due time. Most of our information on the subject has been obtained within recent years, and fresh evidence can hardly fail to present itself to investigators in the future. DAVID MACRITCHIE.

Flames from Mud on a Sea-Shore.

WE should like to draw your attention to the following spectacle which some of us witnessed on the sea-shore at Blundellsands on Thursday evening, June 5, at about eight o'clock.

The evening was dull and grey, a strong north-westerly wind was blowing in from the sea and the tide was flowing in. In the distance we first saw smoke with frequent jets of fire bursting forth from the mud of a shallow channel. Drawing near, we perceived a strong sulphurous odour, and saw little flames of fire and heard a hissing sound as though a large quantity of phosphorus was being ignited. It was impossible to detect anything which caused the fire, only the water where the flames appeared had particles of a bluish hue floating on the surface. The area over which the tiny flames kept bursting forth was about 40 yards.

A gentleman present stirred up the mud with his walking-stick, and immediately large yellow flames nearly 2 feet in length and breadth burst forth. The phenomenon lasted some time, until the tide covered the part and quenched the fire. As we returned from our walk the atmosphere was impregnated with a strong odour of sulphur. An old resident of Blundellsands, who also witnessed the sight, said he had never before seen anything of a similar nature. H. T. DIXON.

9 Agnes Road, Blundellsands, near Liverpool, June 8.

Cuckoo's Egg Thrown out of Bunting's Nest.

ON the morning of May 25 I found a nest of the reed bunting (*Emberiza schoeniclus*) with a cuckoo's egg in it besides three eggs of the bunting itself. When I took some friends to see it two or three hours later, the hen bird was sitting on the three eggs, but the cuckoo's egg was lying smashed outside the nest. It is impossible that any person could have broken it, for there were no traces of bootmarks in the soft mud on the side of the dyke where the nest was, besides it being very unlikely for anyone to have passed the spot during the short time I was away. It would interest me to know if any of your readers are acquainted with cases of small birds pitching the cuckoo's egg out of the nest instead of hatching it in the orthodox style.

Higham, May 27. T. G.

VOLCANIC ERUPTIONS IN THE WEST INDIES.

IN the notes already published relating to the disasters which so recently overwhelmed Martinique and St. Vincent, reference has twice been made to the possible connection between seismic efforts and displays of volcanic activity. In connection with this, it has been suggested that had the sudden movements which on April 19 shattered cities in Guatemala been postponed, Mont Pelée and La Soufrière might still have been quiescent. By this it is not intended to convey the idea that if we take earthquakes generally and compare the registers of the same with the registers of volcanic eruptions we shall recognise any direct connection between the two. In Japan there are annually at least 1000 distinct earth shakings, but years may pass without the record of a volcanic eruption. Mount Fuji in that country has remained quiescent for the last 195 years, during which period it has been shaken at least 15,000 times, but in spite of this repeated aggravation the *mons excelsus et singularis* of Dai Nippon still watches peacefully over thirteen provinces round its base.